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BASIC OPERATIONS IN COMMERCIAL CANNING PROCEDURES

VI. COOLING THE TIN CONTAINER AFTER THERMAL PROCESSING

● On this page we have previously described certain basic operations in commercial canning procedures. These have included cleansing of the raw material; blanching; exhausting or pre-heating; sealing the tin container; and thermal processing of the sealed container. In this—the last of this series—we shall discuss the final basic operation, namely, the cooling of the sealed can immediately after the heat process.

One main reason for rapid and thorough cooling of the can contents—as soon as the objective of the heat treatment has been fulfilled—is more or less self-evident. Prompt cooling checks the action of the heat and thus prevents undue softening in texture or change in color of the food. Also important, particularly in the case of foods of an acid nature, is the prevention of excessive chemical action between the food and the metal container, which may occur if the contents of the can remain hot for an extended period of time. In modern practice, two types of cooling are commonly used, namely, air cooling and water cooling.

Air cooling, as the name implies, involves cooling of the tin container by facilitating radiation of its heat into the air. This type of cooling is adaptable to certain products in small cans. In other products, or in the case of larger cans, it is employed chiefly when the slower loss of heat, characteristic of this cooling method, is essential either for preservation of the food, or for the production of certain quality characteristics in the final product. Modern air cooling is accomplished in well ventilated, specially designed warehouses where the cans are piled in rows, allowing ample space between rows for efficient air circulation.

The several methods of water cooling and the technique by which they are carried out are detailed elsewhere (1). Briefly, water cooling may be effected in a variety of ways. The hot cans may be cooled by admitting water into the retort in which they were processed, or they may be cooled after removal from the retort by conveying the cans through tanks of cold, running water or through cold water showers. Large size, or irregularly shaped cans—processed under steam pressure—must be cooled in the closed retort at the end of the process to avoid undue strain on the containers. This is accomplished by "pressure cooling" in which pressure is maintained in the retort during the cooling of the cans, to counterbalance the pressure which develops during the process within the can itself. Commercially, cans are water-cooled to about 100°F. so that enough residual heat remains to dry the can exterior.

Present day canners are fully aware of the importance of cooling their products rapidly and completely as soon as the process is completed, in order to insure the production of canned foods with high quality characteristics. Consequently, in modern canneries the cooling operations are strictly supervised like the other basic operations in the commercial canning procedure. After inspection and labeling, the cooled cans are then ready to enter distribution channels for delivery to the consumer.

In this series of six discussions, we have attempted not only to describe the basic steps in commercial canning procedures, but also to explain their purposes. We trust this series may help bring a better understanding of this important method of food preservation.

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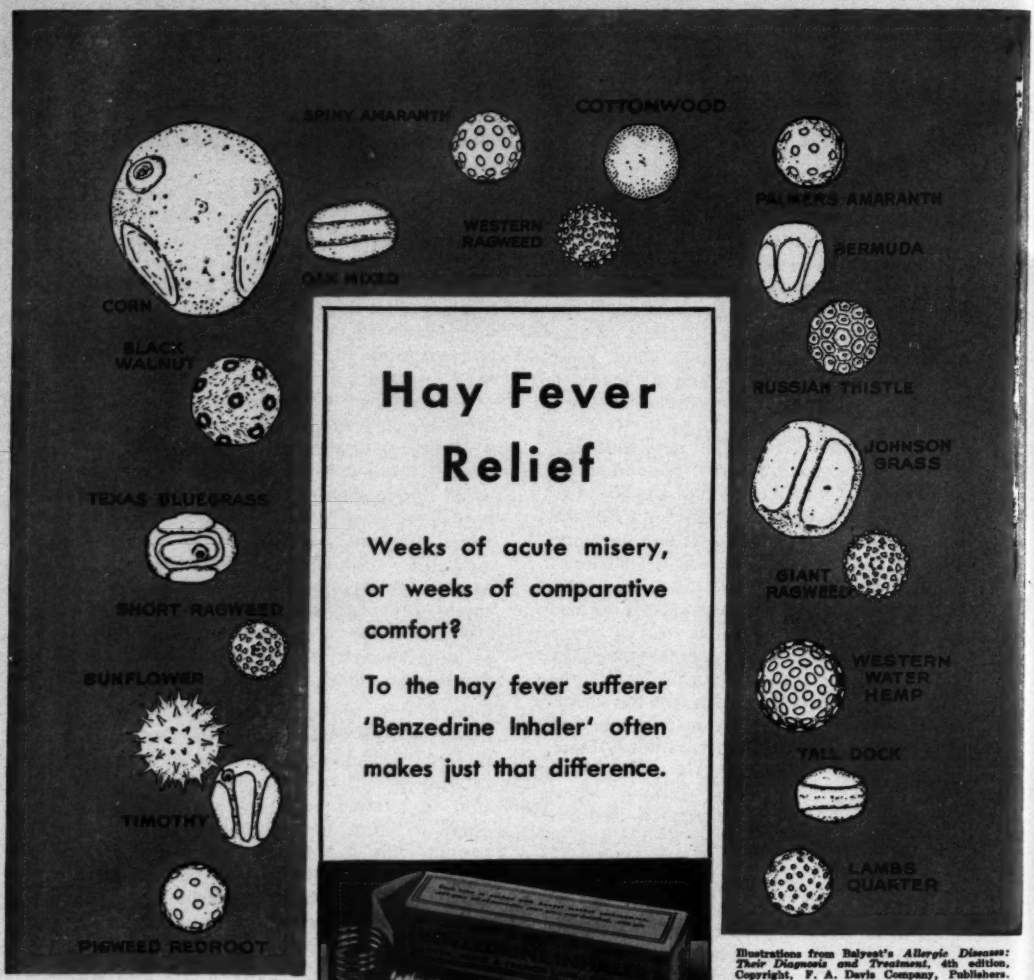

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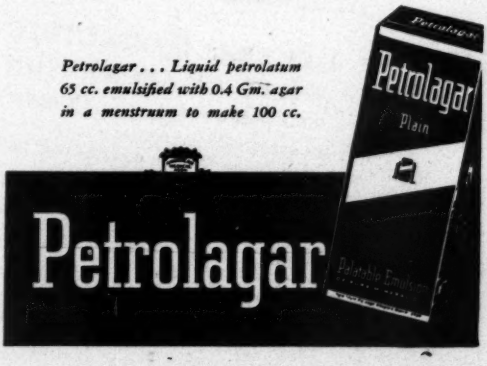

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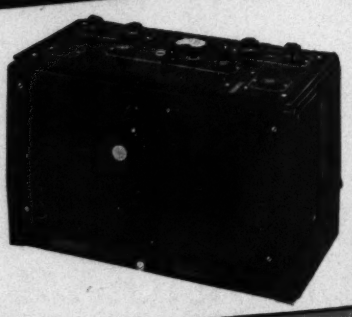

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TUBERCULOSIS IN DELAWARE

ARTHUR C. JOST, M. D.*
Dover, Del.

There has been quite marked improvement in Delaware, as evidenced by a reduction in the mortality caused by the disease, since the year 1921. The improvement is to be measured by the rates of loss in each 100,000 of population, having fallen from 137 in the year 1921 to 58 in 1937. For purposes of comparison, these figures may be contrasted with those of the U. S. Registration Area for the named years, namely, 99 in 1921 and 55.6 in 1936, the figures for 1937 not yet having been published. The drop has therefore been sharper in the state, though it may not have been so orderly. The Area, which has increased greatly in population through the addition to it of states qualifying for admission, shows a sustained improvement, little varying from year to year. A marked improvement in the state in any year seems to be followed by a period of escillation, before another drop occurs. Thus the year 1937 was not the year which in the state showed the best rate it has yet obtained.

It is quite possible, however, that the consideration of the rate of the state as a whole, quite fails to show adequately the change which is taking place from year to year. For a much more complete picture, the examination of the rates by race gives much more information.

The rate of loss of the white population of the state has fallen from 107 in 1921 to 42 in the year last past. This represents a reduction of about 60 per cent. The reduction has been quite regular, subject to the condition above referred to, possibly as regular as is to to be expected for such a population. There is, however, marked irregularity in respect of the various population groups. The years commencing and terminating the period show best the change, the intervening years falling into line in accordance with the trend.

DEATHS (White) FROM TUBERCULOSIS

Age Group	1921	1937	Plus or Minus Difference	Percent Reduction
0-4	14	4	Minus 10	81%
5-9	3	0	Minus 3	
10-19	20	3	Minus 17	
20-29	48	14	Minus 34	71%
30-39	46	16	Minus 30	65%
40-49	24	13	Minus 11	46%
50-59	13	20	Plus 7	
60-69	12	10	Minus 2	
70-79	14	8	Minus 6	
80 and over	0	2	Plus 2	

There are several points in connection with the table which deserve comment.

A. The highest rates of improvement are to be found in the youngest age groups. For all persons under age 20, the losses have declined to the extent of about 81 per cent.

B. Actually more lives were lost in the age groups above 50 during the year 1937 than in 1921. (40 to 39)

C. The classical curve of tuberculosis deaths, one reaching its highest point in the age groups in which young adults are included, has quite altered. Whereas in 1921 the top of the curve was reached among those aged 20 to 29 (the number being 48), the high point in 1937 involved the population groups between 50 and 59. The highest rate is now to be found in the 70 to 79 age group.

In so far, then, as the white population is concerned, tuberculosis does not now seem to be a disease of the central age groups. The average age of all the white tuberculous who died in 1921 was 35; of those who died in 1937, it was 56. The average ages of fifty inmates of Brandywine Sanatorium, patients on July 1st, 1925, or admitted till September of the same year, was 31.5 years. The average ages of the last fifty admissions to the same institution was 34.3.

It may be that the intimations of the latter

*Executive Secretary, Delaware State Board of Health.

named condition are more to be relied upon than are the average ages at death, since to quite an extent the figures of these may be affected by the rules of classifying deaths which are followed by the statisticians. Tabulation rules are to the effect that tuberculosis being anywhere named on a death registration, precedence must be given to it over any other joint or complicating cause. But the falling off of clinic attendance and the difficulty in filling the wards of the Children's Hospital, for which institution there has never been a waiting list, may be cited as evidences from other sources of the decline of the disease among the younger elements of the white population.

An entirely different picture is presented in respect of the colored. In respect of these, also, there has been improvement, indicated by a reduction of the rate per 100,000 from 328 in 1921 to 160 in 1937, or in number of deaths from 100 to 55. The per cent of improvement is therefore about 50, somewhat lower than the other figure. The number of persons dying by age groups seems to present an entirely different condition.

DEATHS (Colored) FROM TUBERCULOSIS

Age Group	1921	1937	Plus or Minus Difference	Percent
0-4	7	3	Minus 4	
5-9	3	1	Minus 2	39%
10-19	21	15	Minus 6	
20-29	26	13	Minus 13	50%
30-39	12	8	Minus 4	33%
40-49	18	9	Minus 9	50%
50-59	6	2	Minus 4	66%
60-69	5	2	Minus 3	60%
70-79	2	2		

This table contrasts quite sharply from the one above given.

A. The improvements which have been experienced are to be seen especially in the advanced age groups. For example, for ages under twenty the improvement is represented only by 39%, contrasting with 81% for the other group. Whereas for all ages over fifty among the whites there had actually been more deaths, among the colored there was a 54% improvement.

B. The classical curve, the apex of numbers being found in early adult life, is still a feature of the colored experience. Among these the greatest number of deaths in 1937 occurred in age group 10 to 19, tapering off among those of more advanced ages.

C. The average age of death was almost exactly the same during each year, about 30.

Taking into consideration the differences between the white rate in 1921 and the colored rate in 1937, the similarity of the curves is noticeable. One seems to be justified in believing that tuberculosis will never again, in respect of the whites at least and unless something of a catastrophic nature supervenes, take the yearly toll which heretofore has been taken. We may hope, in fact, that the reduction in the loss of life will continue till, as some public health authorities are not hesitant in declaring, the disease will not long be a public health problem of importance. If so, are we justified in believing that the improvement will take place in the steps of the process which can be followed in respect of our white population, namely, the gradual wiping out of the loss in one of the young age groups after another till finally even the older ones are affected by the change? It would appear that tuberculosis control of the white population of the state, if indeed there be any such thing as tuberculosis control at all, is approximately about twenty years in advance of that which has been brought about in respect of the colored population. But up to the present time much the same procedures have been followed in respect of both sections of our population. Why has one section responded so noticeably, while in the other the same reaction cannot be observed?

Certainly, there are vast differences in respect of a number of economic conditions or factors, the importance of which cannot be overlooked. Moreover, although this is only a development of the past few years, there is a difference in respect of the provision made by the state for the care in hospital of its tuberculosis sufferers. Provision has been made for hospital space, equivalent to two beds per annual white death. For the colored there is little more than half a bed a death. Is this one of the reasons why the colored rate exceeds that of the white about four times?

Another question may be asked. If what might be considered to be the normal process of disappearance is that of which there is evident proof in respect of the whites, namely, the progressive reduction beginning with the youngest and following the other age groups

in order, should not our efforts be so planned as to coincide with that process? Should we not place greater stress upon the preventive work which we can undertake for the protection of the young, commencing with the infants?

Briefly, the control efforts now in force in the state are those afforded by diagnostic clinics, the provision of sanatorium beds and a follow-up service. The number of diagnostic clinics is such that little difficulty is experienced in making the service available for every portion of the state. There seems to be a fairly ample provision of hospital beds for the whites, since now the waiting list of that institution has been fairly well provided for. This cannot be said in respect of the colored institution, since at Edgewood there are sometimes as many on the waiting list as there are in the institution. In the files of the follow-up nursing service there are records of a total of 949 active and arrested cases and of 4669 contacts who are being visited at regular intervals by the nursing staffs. Tuberculin testing and x-ray programs have been carried out in all the larger schools of the state. One can think of few ways in which this program can be profitably supplemented, unless it is by vaccination with B. C. G.

The vaccination of children against tuberculosis by the use of this material was commenced about sixteen years ago in Europe. The practice appears to have there made sufficient headway to have brought it about that in France, where the method first originated, about twenty per cent of all infants receive treatment. Over a year ago there were records of more than a million and a third having been treated apparently with safety so far as the immediate results are concerned. One can be sure of the permanence of the result only after a number of years has elapsed and the child has passed in safety the dangerous period of early adolescence.

The staunchest proponent of the practice in America is Dr. W. H. Park, who ten years ago instituted in New York a series of experimental studies which apparently have convinced him of the value of the procedure. The purpose of the study then undertaken was, as stated by himself, to determine if the vaccine was free of harm to human beings, if it was effective in the prevention of tuberculosis, and if the good accomplished was enough to warrant its use on a large scale as a public health measure. He has himself given the answers to these questions.

1. "The evidence obtained by other workers and by us shows more and more clearly that the B. C. G. vaccine is harmless to animals and to human beings."

2. "In our experience the parenteral administration of the Calmette culture is more effective than the oral because the tuberculosis death rate decreased to its half when the oral method was used, and to its fourth when the B. C. G. vaccine was injected intracutaneously or subcutaneously."

3. "As the use of B. C. G. vaccine is harmless and increased considerably the resistance to tuberculosis, its use should be urged as a public health measure for the prevention of tuberculosis in those who have not yet become infected and may later be exposed to tuberculosis in their own families." (American Review of Tuberculosis, Oct. 1936.)

C. Gregory Kayne has stated his opinion in these terms: "Two facts with regard to B. C. G. are, nevertheless, emerging; it is harmless, and it is of some value if used, under certain conditions, as an adjunct to other methods of prophylaxis." (American Review of Tuberculosis, July 1936.) The reports on which his conclusions are based are wholly European in origin, and special importance seems to be given to the improvement said to have taken place in Oslo after the use of B. C. G. in hospital nurses.

Among the most recent reports are some published within the past two months from Canadian sources. Much more experimentation and also actual use of the material seems to have taken place in Canada than in the United States.

In Montreal it has been given for a period of at least twelve years, and a total of 15,782 vaccinations were recently reported. Special emphasis seems to be placed upon the results obtained from a group of 573 vaccinated children, considered in relationship with a control group which numbered 943. The differences in mortality were measured by the rate of 5.3 among the control group and 1.9 among the vaccinated. The first of these

figures had a standard variation of .72; the second a variation of .55. The difference was therefore 3.4, with a variation of .9 in favor of the vaccinated children, a significant difference if admitted, since the variation is exceeded more than three times. In the same way the difference in mortality was measured by the rate 11.4 with a variation of 1.03 among the controls, and 5.1 with a variation of .9 among the vaccinated. The difference is 6.3 with a variation of 1.3, again a significant difference.

A difference in mortality from non-tuberculous diseases in the two groups, (8.3 among the controls and 4.5 among the vaccinated) seems to indicate that the groups were not entirely comparable, and that in order to bring about complete parity, the mortality and morbidity figures of the controls should be divided by a factor of correction equivalent to 8.3 divided by 4.5.

From the New York experience it has been calculated that one must vaccinate 1667 children in the general population, or 37 children in families classed as tuberculous or 14 children in families in which there is an open case of tuberculosis in order to prevent one death from the disease.

This would appear to be worth while, so far as this state is concerned, in the hope that this method of attack would give a valuable impetus to the control efforts as they affect the youngest age groups, an effort which it would be well to strengthen.

RESUME OF MONTREAL STATISTICS—1926-1937:

Total vaccinations, 15,782; study group numbered 1516, of which 573 were vaccinated and 943 were unvaccinated controls.

TUBERCULOSIS DEATHS AND MORBIDITY IN STUDY GROUPS

No.	Deaths		Cases	
	No.	Rate per 100	No.	Rate per 100
573 vaccinated	11	1.92	29	5.1
943 controls	50	5.3	108	11.4

DEATHS FROM NON-TUBERCULOUS DISEASES

	Deaths	
	No.	Rate per 100
573 vaccinated	26	4.54
943 controls	78	8.3

Note: Figures supplied by Dr. J. A. Baudouin.

COMPARATIVE INCIDENCE OF TUBERCULOSIS AMONG WHITE AND COLORED IN DELAWARE

LAWRENCE D. PHILLIPS, M. D.*
Marshallton, Del.

In January 1934, tuberculin testing was begun in the state by the staff from the Brandywine Sanatorium in conjunction with the Delaware Anti-Tuberculosis Society, and with the aid of the State Board of Health nurses. This work is being continued and data is now available from all sections of the state, both white and colored. This work has been done in the schools and in the regular scheduled chest clinics.

All testing has been done by the Mantoux method. In the beginning the material used was Old Tuberculin (O. T.); three tests being employed, namely: .01 mgm., .1 mgm. and 1 mgm. Later the National Tuberculosis Association recommended MA 100, which was used until the newest product, Purified Protein Derivative (P. P. D.) was put on the market. Since that time all testing has been done with this product, using .0002 mgm. and .05 mgm. dilutions for two tests.

To date 5950 children have been tested; 4867 white and 1083 colored. A table of the entire total by age groups, male and female, is as follows:

TABLE No. 1

	Number Tested	Number Reacted	Per Cent Reacted	Number Showing Infection	Number Needing Treatment
Under					
6—M.	214	74	34.6	7	3
F.	221	69	31.2	9	4
6—M.	184	37	20.1	10	0
F.	191	46	24.1	7	0
7—M.	231	48	20.8	7	0
F.	269	52	18.9	8	0
8—M.	235	64	27.2	13	0
F.	277	59	21.3	8	2
9—M.	242	81	33.9	18	0
F.	261	77	29.5	24	2
10—M.	262	74	28.2	14	1
F.	306	94	30.7	20	0
11—M.	236	77	32.6	18	0
F.	271	91	33.6	19	0
12—M.	239	97	32.2	24	1
F.	310	113	36.4	23	0
13—M.	249	117	46.2	30	3
F.	251	93	37.0	16	0
14—M.	248	111	44.3	31	2
F.	242	104	43.0	26	3
15—M.	183	90	49.1	15	2
F.	190	86	45.3	22	0
16—M.	161	101	62.7	28	0
F.	107	40	37.4	13	0
Over					
16—M.	189	114	60.3	15	2
F.	181	98	54.2	23	2
Total	5950	2107	35.4	448	27

The reason for the high rate of infection in the under six-year and six-year groups is that

*Director, Brandywine Sanitorium.

most of these children are, or have been, definite contacts.

The following table divides the above into white and colored by age groups:

TABLE No. 2

	Number Tested	Number Reacted	Per Cent Reacted	Number Showing Infection	Number Needing Treatment
Under					
6—W.	370	117	31.6	20	5
C.	65	26	40.0	3	2
6—W.	307	64	20.8	13	0
C.	68	19	28.1	4	0
7—W.	413	77	18.4	12	0
C	87	23	26.4	3	0
8—W.	431	96	22.3	18	2
C.	81	27	33.3	5	0
9—W.	412	128	31.1	33	1
C.	91	30	33.	11	1
10—W.	460	132	28.7	31	1
C.	108	36	33.3	4	0
11—W.	419	139	33.2	27	0
C.	88	29	33.	10	0
12—W.	457	171	37.9	42	1
C	92	39	42.4	6	0
13—W.	397	159	40.1	37	1
C.	103	51	49.5	12	2
14—W.	376	164	43.6	46	2
C.	114	51	44.7	16	3
15—W.	308	141	46.	29	1
C.	65	35	53.8	10	1
16—W.	206	102	49.5	29	0
C.	62	39	63.	12	0
Over					
16—W.	311	176	56.6	34	1
C.	59	36	61.0	8	3
Total					
W.	4867	1666	34.2%	371 7.6%	15 .3%
C.	1083	441	40.7%	104 9.6%	12 1.1%

The following table is comparing the white and colored in the sections in which we were fortunate enough to be able to test both races.

TABLE NO. 3

	Number Tested	Number Reacted	Per Cent Reacted	Number Showing Infection	Number Needing Treatment
Under					
6—W.	347	109	31.4	25	7
C.	65	26	40.0	3	2
6—W.	224	56	25.0	11	0
C.	68	19	28.1	4	0
7—W.	300	60	20.0	11	0
C.	87	23	26.4	3	0
8—W.	317	67	21.1	16	2
C	81	27	33.3	5	0
9—W.	317	99	31.2	32	1
C.	91	30	33.0	11	1
10—W.	337	100	29.3	26	1
C.	108	36	33.3	4	0
11—W.	306	90	29.4	20	0
C.	88	29	33.0	10	0
12—W.	357	119	33.3	33	0
C.	92	39	42.4	6	0
13—W.	301	103	34.2	27	1
C.	103	51	49.5	12	2
14—W.	292	97	33.5	33	1
C.	114	51	44.7	16	3
15—W.	240	109	45.4	23	1
C.	65	35	53.8	10	1
16—W.	167	83	49.9	21	0
C.	62	39	63.0	12	0
Over					
16—W.	255	130	54.9	29	1
C.	59	36	61.0	8	3
Total					
W.	3780	1222	32.3	307	15
C.	1083	441	40.7	104	12

The following table shows each individual section in which both white and colored were tested:

TABLE NO. 4

	Number Tested	Number Reacted	Per Cent Reacted	Number Showing Infection	Number Needing Treatment
Laurel & Seaford					
W.	668	172	25.7	45	1
C.	137	34	24.8	9	1
Dover					
W.	430	137	31.9	47	2
C.	165	46	28.1	15	1
Selbyville, Frankford Millsboro					
W.	339	93	27.4	19	0
C.	172	107	62.2	22	4
Smyrna & Clayton					
W.	541	144	26.4	48	0
C.	130	23	17.7	11	0
Lewes					
W.	136	47	34.5	6	0
C.	82	23	28.0	7	0
Ferris Industrial					
W.	94	62	65.5	12	1
C.	124	68	54.8	14	0
New Castle					
W.	234	77	28.6	13	2
C.	56	24	42.8	4	1
Wilmington					
W.	811	326	40.2	75	7
C.	96	46	48.1	9	1

The reason for the high incidence in Wilmington is due to the fact that practically all the work was done in the clinics on contact children.

From the above the incidence of infection is fairly parallel in the communities except in two instances.

The number of deaths and the rate for both white and colored is listed below:

DEATH RATE 1921-1937 INCLUSIVE

	WHITE		COLORED	
Year	Number Deaths	Rate	Number Deaths	Rate
1921	208	107	100	328
1922	165	85	102	331
1923	172	88	87	280
1924	174	88	89	285
1925	147	74	83	264
1926	171	85	82	259
1927	141	70	81	254
1928	131	65	59	184
1929	132	65	60	186
1930	103	50	61	187
1931	136	66	74	225
1932	105	51	59	179
1933	116	55	62	186
1934	95	45	57	170
1935	99	47	59	175
1936	78	37	46	135
1937	90	42	55	160

The average of the rate for the past seventeen years is 66 for white and 223 for colored. The colored being 3 1/3 times greater than the white rate.

CONCLUSIONS

These figures are too small to draw any definite conclusions. However, by referring to the above tables, it appears that the incidence

of infection is fairly closely parallel in each community between the white and colored races.

The percentage of active cases found by tuberculin testing and x-raying positive reactors closely parallels the white and colored rate in that the rate is 3 1/3 times greater in the colored, while the incidence of active cases found is also 3 2/3 times greater in the colored.

From the above one may draw the conclusion that the two races are almost equally infected; 32.3% white as against 40.7% for colored, but that the colored race from their infection will develop active tuberculosis 3 2/3 times more often in comparison with the white. Whether this is due to living conditions, lack of resistance or relative immunity is not in the scope of this paper.

THE STATE'S CRIPPLED CHILDREN'S PROGRAM

WOODBRIDGE E. MORRIS, M. D.*
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For a crippled child to receive the full benefit of all that modern medical science can do for him, four major steps are necessary. He must be "found," diagnosed, treated, and given suitable after-care and training.

To help him take these steps, a Crippled Children's Service was established by the State Board of Health last October, using Social Security Act funds as a nucleus. The service is a coordinator. Such effectiveness as it may achieve (and maintain) derives from the cooperation it receives from practicing physicians, hospitals, the school system, other official and private community organizations, and the laity in general. This cooperation is excellent.

The name of a crippled child found by an individual or agency is sent to the Service. A public health nurse investigates. The family physician is consulted. If adequate care is being provided, nothing further is done. If not and if he advises it, arrangements are made for bringing the case to a diagnostic clinic. The service is limited to indigents.

The 1937 Assembly, in the bill which designated the State Board of Health as the official state agency to promote this program, defined neither crippling nor indigence.

*Director, Crippled Children's Service, Delaware State Board of Health.

For the present, a crippled child is taken to be a person of under 21 years of age who for reason of a physical defect or infirmity, whether congenital (cataract, hare lip, cleft palate, etc.), or acquired by accident, injury, or disease (non-custodial rheumatic heart conditions, burn contractures, etc.), is or may be expected to become totally or partially incapacitated for education or for remunerative occupation; excluding, however, such persons whose chief disability is irremediable blindness or deafness, and excluding mentally defective cases, speech defects and epilepsy. We are also excluding, for the present, cases of chronic bronchitis, atelectasis, lung abscess, pyelitis, nephritis, hernia; also burns in the acute stage, fractures treated without resulting deformity, and chronic otitis media without demonstrable hearing defect.

Indigence is determined by the state agency on a case basis. It is taken to vary with the nature of the complaint in relation to the entire economic status of the family. Families not considered indigent under normal circumstances are considered indigent when found unable to pay for more than a small fraction of the costs involved in adequate treatment of a crippling condition. It scarcely seems necessary to point out here that such treatment is frequently very expensive.

By arrangement between the State Board of Health and the Nemours Foundation, the Board is assuming responsibility for case-finding, diagnosis, after-care, and field work generally. The Foundation undertakes the costs of treatment. An account of the Foundation's plan is published elsewhere in this issue. For the present, it has agreed to defray costs of treatment up to $75 per case for cases which, in the judgment of the clinician, are likely to be permanently worse off if treatment is delayed until the Nemours Foundation opens its projected hospital. Costs in excess of $75 are paid by the Levy Courts, or are absorbed by the hospital concerned.

State diagnostic clinics are held monthly at Kent General Hospital, Dover; Beebe Hospital, Lewes; and at the State Board of Health clinic, Seaford. Personnel consists of an orthopedic consultant, a pediatric or other consultant where indicated, the state crippled children's nursing supervisor, the district pub-

lic health nurse, and the secretary of the Crippled Children's Service. An average of 15 cases is seen at each clinic. Practitioners are welcome visitors. Following each clinic, a report is sent to each physician on any of his referrals seen at that clinic.

For cases which otherwise would have no way of coming, transportation to clinics is provided by neighbors and by volunteers from community clubs and organizations.

The cost of x-rays taken at clinics is defrayed by the State Board of Health. Disposition of the case thereafter is up to the clinician.

The Service arranges the hospitalization of such cases as require it, and sees to it that the instructions of the physician are carried out in the home. The crippled children's nurses are skilled in the adjustment of appliances and in physiotherapy. If during convalescence foster-home care is needed following hospitalization but prior to the return of the patient to his home, this is also arranged by the Crippled Children's Service through public or private social agencies of the state.

A certain number of cases require repeated dressing following their discharge from hospitals. In the past, the family physician has been asked to supply dressing materials as well as his services. Beginning this summer, a small allotment has been made to purchase bandaging materials to replace those which the family physician has used on such cases from his personal supplies. Since no recompense may be given a physician from state funds for his services without laying such an arrangement open to the criticism of "state medicine," the State Board of Health feels that the least it can offer such a physician is this replacement of his dressing materials.

State funds are not available for appliances and casts. These costs are accordingly absorbed by the hospitals and agencies, or are undertaken by civic organizations as a result of arrangements by the Crippled Children's Service.

The crippled children's program is limited as to funds. Although the Social Security Act appropriates $23,000 annually for a Delaware crippled children's program, only about $5,000 of this can be matched. This is because funds cited for matching must be expended by the state agency, whereas at the present time practically all of the funds spent on crippled children in this state are expended by private agencies. For example, it would be necessary for the state law to be altered regarding Levy Court appropriations to hospitals, so that a portion of their funds could be given to the State Board of Health for the Crippled Children's Service, in order that such funds now being expended on crippled children could serve to match Federal funds. Or else the hospitals and other agencies supported by public funds would have to make over some of those funds completely to the State Board of Health, without assurance that the funds would be spent in the institution which thus sacrificed them.

Even if this arrangement were possible, the State Board of Health's policy is opposed to entering the field of treatment. Consequently, Delaware crippled children are not receiving the benefit of $17,000 a year which is appropriated for their use by the Social Security Act. The balance available to us in Washington was last reported at $62,000. Apparently, this will eventually revert to the Treasury of the United States for other expenditure, or will be reallocated by the Children's Bureau so as to be used by other states than Delaware for crippled children's services. At the present time, there seems no prospect of Delaware obtaining these funds. Fortunately, the resources of the Nemours Foundation will eventually more than offset this loss.

PREVENTION STRESSED

Prevention of crippling is a major function of the state crippled children's program. Medical literature shows that many birth injuries can be prevented by adequate prenatal and obstetrical care. The State Board of Health refers all prenatals to physicians or hospitals, regardless of the patient's economic status. Crippling from birth injury and from congenital deformity can be minimized in most instances by early neonatal treatment. Such cases are also referred to physicians, regardless of economic status, with the understanding that the indigent ones may be referred to the state crippled children's diagnostic clinics at the physician's request.

For prevention of crippling from disease there are two approaches—through the professional man and through the public. The

Nemours Foundation plans to undertake activity in the first field, by offering lecturers or perhaps courses of lectures on crippling conditions to the State and County Medical Societies. The State Board of Health is undertaking the public approach, through its field staff and its publicity. An illustration of this is the leaflet published in June, a copy of which was mailed to every physician in the state, entitled "Infantile Paralysis: What a Parent Should Know and Do About It." These are being left at every home visited by the 27 public health nurses in Delaware through the entire summer; they are also available at clinics, hospitals, exhibits, and meetings of organizations.

Attention might be here directed to the last paragraph of this leaflet. In order that orthopedic care may be available to minimize the crippling from infantile paralysis, the two orthopedic surgeons in the state (Dr. Irvine M. Flinn, Jr., and Dr. A. R. Shands, Jr.) have placed their services at the disposal of the physicians of the state as consultants in every case of polio which is reported. It is hoped that every physician to whose lot falls the care of such a case will freely and fully avail himself and his patient of this opportunity.

To develop a program as complete and as effective as possible, a state Crippled Children's Advisory Committee has been formed. It consists of Dr. Benjamin F. Burton, Jr., Mrs. Louis A. Drexler, Dr. Irvine M. Flinn, Jr., Mr. J. C. Messner, Mrs. Charles F. Richards, Dr. A. R. Shands, Jr., Dr. Joseph B. Waples, Jr., and Mr. C. Rollin Zane, and constitutes as representative and interested a group of advisers as can be found in Delaware. It meets periodically to consider objectives and difficulties of the program, and makes recommendations regarding any aspects of the services which seem subject to betterment. Meeting in April, the committee recommended that a doctor or nurse examine each newborn not less than 10 or more than 21 days after birth, and state, when recording the name, whether or not deformity is present. To further this, it suggested that the naming period be made a certain number of days after birth, rather than that it be limited to the end of the month. This is a modification of the vital statistics law in Kentucky and other states which requires that a birth report include a report of a congenital deformity.

The fundamental purpose of this entire program is to brighten the future of every Delaware crippled children as far as human ingenuity can contrive it. Suggestions and criticism are always welcome.

THE NEMOURS FOUNDATION FOR CRIPPLED CHILDREN

ALFRED RIVES SHANDS, JR., M. D.*
Wilmington, Del.

The problem of the crippled child has long been of interest but only in recent years has this interest been as widespread as it is today. The crippled children now have a chance for physical and social restoration which years ago was not possible.

In the early 19th century the fitting and wearing of braces was the extent of the medical treatment. In 1831 a German surgeon by the name of Stromeyer demonstrated that the cutting of a tendon about a contracted joint was a worthwhile surgical procedure and thus began the modern operative era for cripples. An English physician, W. J. Little, traveled to Hanover, Germany, in 1837, and allowed Doctor Stromeyer to cut the contracted heel cord in one of his own deformed feet. The improvement in walking was so marked that he became intensely interested in the problem of the cripple. Due largely to his efforts upon his return to England the Orthopaedic Institute of London (later the Royal National Orthopaedic Hospital) was founded, which stands today as one of the finest institutions for the medical care of cripples in the world. Thus was started the modern hospital era for the crippled child.

In 1852 a Flemish surgeon, Mathijsen, demonstrated the usefulness of plaster of Paris bandages in making casts for the support of the body and extremities. This marked another epoch in the treatment of crippled children. Plaster of Paris bandages remain today the most useful single item in the therapeutic armamentarium of the orthopedic surgeon.

With the demonstration in 1866 by Lord Lister of operations without infection the era of aseptic surgery began. Crooked bones and

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deformed joints could be safely operated on and straightened without the dangers of osteomyelitis, purulent arthritis, and septicemia, with sometimes death.

The first orthopaedic hospital to be established in this country was the Hospital for Ruptured and Crippled in 1863 in New York City. However, a ward devoted exclusively to the care of crippled children had been opened in the House of The Good Samaritan in Boston one year previously.

In 1922 the first Shriners' Hospital for Crippled Children was opened in Shreveport, Louisiana, which was rapidly followed by the building of 14 other similar units distributed over the United States and Canada. This project of the national Masonic Shrine has been called the greatest single piece of humanitarian work in modern times. With the opening of these hospitals a tremendous stimulus was given everywhere to the interest in the care of the crippled child. The civic clubs, notably the Rotary and Kiwanis, became crippled-child conscious and effected national programs for the aid of the physically handicapped.

In 1935 the era of the government's participation in the care of crippled children began. In the Children's Bureau of the Department of Labor in Washington there was established a crippled children's division to administer the $2.850.000 yearly Social Security fund appropriated by Congress. These moneys are being spent for the diagnosis and treatment of diseases causing crippling in childhood. At the present there is no state in the Union which does not have Federal funds available for the treatment of the crippled child. In practically every state there is now an adequate number of hospital beds for crippled children.

Mr. Alfred I. du Pont, during his lifetime, was deeply interested in the problem of the physically handicapped. After his death on April 29, 1935, his wishes to establish a Foundation and to build an institution for the care and treatment of crippled children were made known through his will. On September 2, 1936, the Nemours Foundation was incorporated for the purpose of carrying out the terms of the will. The Trustees of the Foundation, as designated, were his widow, Mrs. Alfred I. du Pont; her brother, Mr. Edward Ball, and Mr. du Pont's son-in-law, Col. Reginald S. Huidekoper.

A Medical Advisory Board was appointed by the trustees and on March 5, 1937 the first meeting was held in Epping Forest on the St. Johns River near Jacksonville, Fla. The members of this Board are: Dr. Thomas R. Brown, Associate Professor of Medicine, Johns Hopkins University, Baltimore, chairman; Dr. Robert B. Osgood, Professor Emeritus of Orthopaedic Surgery, Harvard University, Boston, secretary; Dr. Philip D. Wilson, Clinical Professor of Orthopaedic Surgery, Columbia University School of Medicine and Chief Surgeon of the Hospital for Ruptured and Crippled, New York City; Dr. George E. Bennett, Associate Professor of Orthopaedic Surgery, Johns Hopkins University, Baltimore; Dr. deWitt B. Casler, Associate Professor of Gynecology, Johns Hopkins University, Baltimore; Dr. William T. Graham, Professor of Orthopaedic Surgery, Medical College of Virginia, Richmond; Dr. Beverley R. Tucker, Professor Emeritus of Neurology and Psychiatry, Medical College of Virginia, Richmond; Dr. Michael Hoke, formerly Chief Surgeon at Warm Springs Foundation, Atlanta. In June 1937 the author, who was then an Associate Professor of Surgery in charge of Orthopaedics at Duke University School of Medicine, was appointed Medical Director of the Foundation.

It is now hoped that, with the establishing of the Nemours Foundation and the building of an institution for crippled children another epoch is being made in the history of the care of the physically handicapped child.

The Medical Advisory Board of the Foundation have decided on a four-point program: (1) medical care of the crippled child; (2) education of the crippled child; (3) research on problems relating to the crippled child; and (4) postgraduate instruction for persons interested in this field of work.

1. *Medical Care for the Crippled Child.* This phase of the program is to start with the building of a 100-bed hospital within the grounds of the Nemours Estate, three miles from the center of Wilmington. Plans have been approved and ground will be broken this October. The tentative date for the opening of this institution is the fall of 1939.

A brief description of the hospital is as follows: the initial building will have, on the first floor, administrative offices, an outpatient clinic, an x-ray department, two school rooms and boys' and girls' wards which will face south and open on a wide grass terrace. On the second floor will be the operating rooms, a ward for colored children, an isolation and observation ward, internes' quarters, staff dining rooms, and a museum. On the first floor in a separate wing of the building adjacent to the wards, will be the physical therapy department and therapeutic pool, an auditorium-gymnasium and two additional school rooms. On the second floor of this wing will be a twelve-room laboratory section. The nurses' quarters will be on the third floor. In the basement will be the storage rooms, the kitchen services, dining rooms and locker rooms for the hospital help. There will be a separate building to house the heating plant and laundry.

Children up to the age of 16 years will be admitted to the hospital but may be kept in the institution for educational purposes to an older age if necessary.

2. *Education of the Crippled Child.* After the hospital is opened it is proposed to build several cottages, separate from the hospital, which will house the convalescent school children. A school building will be erected later. In the educational program emphasis is to be placed upon the vocational education of the child over 14 years of age. Following this training it is hoped that it will be possible to find permanent employment for these children. All types of training will be offered, such as dress-making, hat-making, weaving and basketry for the girls, and shoe-making, watch and jewelry-making, upholstering, leather craft, printing and commercial art for the boys. The type of vocational education will depend upon the child's physical handicap and natural abilities. Primary and secondary school education will be given to the younger children.

3. *Research.* The research program will include both laboratory and clinical problems. The original laboratories will be for biochemistry and bacteriology, with facilities for pathology. These will be staffed by a personnel particularly interested in research problems. A certain number of hospital beds will be available for the research division, so that the clinical and laboratory work may be coordinated, to their mutual advantage.

In addition, it is hoped that the research program may be extended to include certain psychological problems of the crippled child. For the coming year four research fellowships have been established in selected medical centers for the study of problems directly related to crippling diseases in childhood.

4. *Postgraduate Instruction.* Courses of instruction for those in the various fields of crippled children's work will be established as soon as warranted by the organization of the hospital and the institution. There will be instruction in the nursing care, in the problems relating to social service, physical therapy, and teaching of the handicapped. With the opening of the hospital there will be a group of younger doctors in constant attendance, learning the medical and surgical care of the crippled child.

At the beginning only crippled children from the state of Delaware will be admitted; it has been estimated at this time that there are approximately 200 in need of hospital care. It is thought that eventually 25 active hospital beds and 50 convalescent beds will be sufficient to meet the needs of this state.

The question has been asked—how will this institution differ from other crippled children's hospitals? Its chief difference from most similar institutions will be the emphasis upon vocational education of the crippled child and upon research.

If the vision of Mr. Alfred I. du Pont and the plans of the Medical Advisory Board become realities, nothing can prevent the activities of the Nemours Foundation from exerting a tremendous progressive influence on this field of work, and the institution from becoming one of the greatest crippled children's centers in our country. When these plans become realities another era in the care of the crippled child will have begun.

803 Delaware Trust Building.

PNEUMONIA CONTROL

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Dover, Del.

In the fall of 1937 the State Board of Health offered to aid practitioners in an effort to reduce the mortality from lobar pneumonia. Technicians throughout the state were given the opportunity to familiarize themselves with the Neufeld typing method. Typing sera was supplied hospital laboratories, and typing fees guaranteed the laboratories for indigent cases. Therapeutic sera was made available.

There was a very gratifying response, a decided increase in the number of typing examinations made, and therapeutic sera was used in considerably more cases than previously. Figures are too small to warrant any conclusions or statistical comparisons, but experience elsewhere supports the belief that Delaware physicians can, by the prompt typing of sputum and early administration of the proper therapeutic sera, reduce the mortality from pneumonia. The pneumonia rate for the twelve months, July 1937 to June 1938, was 80.8 per 100,000 population.

*Executive Secretary, Delaware State Board of Health.

THE INTERSTATE COMMISSION ON THE DELAWARE RIVER BASIN

Its Beginnings, Growth and Plans

RICHARD C. BECKETT, B. S.*
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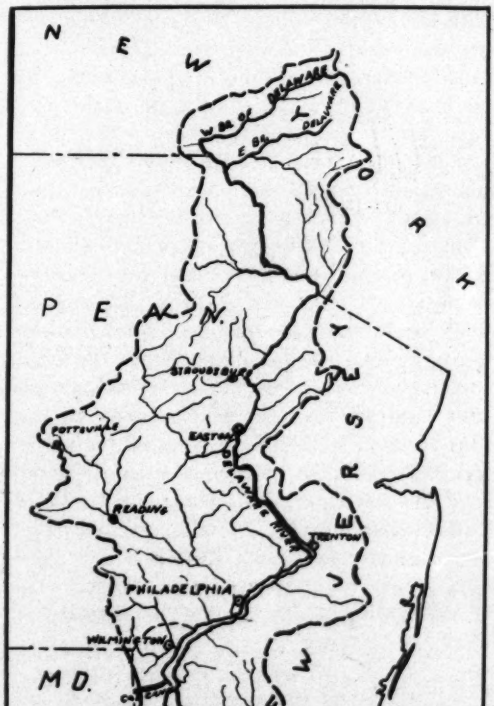
A few years ago a group of citizens realizing the increasing complexity of our government felt that there should be some governmental agency which could act as a liaison body between various states which had certain problems in common. They felt that there were an increasing number of problems slightly too large for one state to handle and yet of not sufficient nation-wide importance for the Federal government to handle. Back of this also was the feeling, I believe, that centralization of government in this country would be further avoided.

As an outgrowth of this idea has come the movement to establish Commissions on Interstate Cooperation which are commissions composed of five senators, five representatives and five appointees of the Governor. Such commissions are empowered to deal with problems that concern adjoining states, and it is an attempt to provide uniformity of intercourse between the states and, in addition, to provide agencies which can deal with other state commissions and also can report back to the state legislatures which created them. Such matters as crime control effecting two or three contiguous states, traffic laws, the uses of streams, etc., might become subjects for mediation under this set-up. Furthermore, such commissions might assist in drawing up compacts between these various states and the Federal government and thus facilitate, in at least as far as time is concerned, action on such compacts.

In order to have a clearing house for the work done by these various state commissions, of which there are now seventeen, the Council



Delaware River Basin—an Empire in itself

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of State Governments was formed, which is at the present time, as I understand it, being financed by the Spelman fund. The Council of State Governments, of which Mr. Henry W. Toll is Executive Secretary, is also the clearing house for such agencies as the American Legislators' Association, the National Association of Attorneys-General, and the National Association of Secretaries of State, and other similar organizations.

WHAT TWO STATES ACCOMPLISHED

In order to bring out Delaware's interest in any such commission, let me briefly review what has occurred between two neighboring states dealing with a joint problem and which, at least, touches work with which I am familiar. In 1930, a very elaborate survey of the Brandywine Creek was made in conjunction with the Pennsylvania Sanitary Water Board and the State Board of Health of Delaware, with Dr. Willim Rudolfs in charge. This survey was made of the whole Brandywine Creek to determine all the sources of pollution and methods of abatement. As a result of this survey, improvements were made to the West Chester and Dowingtown sewage treatment plants, several paper companies installed treatment plants for their wastes, the du Pont Company and the Levy Court installed interceptor sewers to bring certain wastes down below the waterworks intake, and various other improvements reducing the load on the Brandywine Creek have been made. You will understand that the major portion of the work was done by the state of Pennsylvania but that the state of Delaware received the major share of the benefit simply because nearly one-half of our population, namely, the city of Wilmington, derives its water supply from the Brandywine Creek. This is a very good illustration of a cooperative approach to a problem without any legal status attached to it.

THE BIRTH OF AN IDEA

Back in 1936 groups of individuals in the four states, New York, New Jersey, Pennsylvania and Delaware became convinced that the problem of the full use of the Delaware River Basin, both as to its water supply possibilities, its recreational uses, and other purposes, might be more fully developed and protected through the organization of a Commission on the Delaware River Basin. Said Commission to be made up of representatives of these various Interstate Commissions on Cooperation of these states in so far as commissions had been set up. Accordingly, at a meeting held on April 3, 1936, the Interstate Commission on the Delaware River Basin was formed and a new experiment started in the control of an area which might be contrasted in size and population to many European countries. As a matter of fact, the Delaware River Basin and all of its tributaries covers a territory as large as Belgium and has a population of five million spread over an area of twelve thousand square miles. Here was an opportunity to apply "planning" on a large scale so that those who are to enjoy the use of this magnificent valley could have something to say in its future development and could check devastation, that has occurred for generations, namely, through reforestation and the pollution of the waters of this Basin.

MAKE-UP OF THE COMMISSION

This Commission is composed of nine members from the legally established Commissions on Interstate Commissions on Cooperation of Pennsylvania, New Jersey and New York, as well as a representative of the State Planning Boards of the three states, namely, Pennsylvania, New Jersey and New York.

Delaware's appointees originally designated by Governor Buck were Walter Dent Smith, former Secretary of State; Charles H. Gant, Executive Secretary of the Board of Harbor Commissioners, and the writer. Since the original appointments, an effort was made during the last legislature to establish an Interstate Commission on Cooperation in order that Delaware might be officially represented the same as the other three states and further would assume its proportionate share of the budget necessary for the carrying on of the parent organization. Action failed at this Session. However, the appointments made by Governor McMullen parallel the pattern set up by the other states, in that Senator Norris M. Wright was appointed as a representative of the Senate; Chauncey P. Holcomb, a representative of the House of Representatives, along with Mr. Gant and the writer.

One of the pressing problems and the one which the Commission is most anxious to solve

is the question of pollution of the Delaware River and its tributaries by both municipal and industrial wastes. Many attempts have been made to solve this problem by individual state action but each state has been up against a barrier that if the other states would take action they would take action themselves. Some work, however, has been accomplished through voluntary joint action by the individual states.

When we shift to the grossly polluted Delaware River we have a problem that concerns four states, namely, New York, New Jersey, Pennsylvania and Delaware. For fifty years these interested states have been trying to solve the problem of the pollution of the Delaware River by individual state action, with the result that very little has been accomplished because one state could not see why it should clean up if the other state facing it on the other side of the river did not act. Here then is a good illustration of a problem which fits in nicely with the Commissions on Interstate Cooperation, in that if all four states create such commissions there is a much greater possibility of obtaining uniformity in laws relating to pollution, and further there is the possibility of setting up a compact to deal wth this particular problem which as a governmental entity could possibly come under a future public works program just as cities, counties and states have done in the previous Public Works Act.

Since the birth of the Commission, various sub-committees on planning, committees on the quality of water and on the quantity of water have been appointed and the preparation of maps and standards has gone ahead. The committee on quality, which is made up of the chief engineers of the four states, has definitely prepared pollution standards for the whole Delaware River and its tributaries. The whole Basin has been divided into four zones and each zone has been treated with due regard to the recreational uses of the water and further the more important fact that such waters must be used as the raw water supplies of various communities on this water shed and even without the water shed. For instance, a recent decision of the U. S. Supreme Court gives the city of New York the power to take a stated number million of gallons of water per day out of this water shed to be used by the city of New York and then discharged eventually into other waters. The city of Philadelphia must soon come to the Delaware River as an additional source of raw water supply, and of course other smaller communities are already taking their water supplies from this Basin.

REPORT OF QUALITY COMMITTEE

The recommendations of the Quality Committee have been submitted to the state Departments of Health of the four states and these have been accepted by the four states concerned. This means that for the first time in the history of the Delaware River Basin the four states forming this Basin have formally agreed on the pollution standards for the whole Basin and have officially adopted them.

The Quality Committee has also recommended a time schedule and this in turn has been adopted by the full Commission. This time schedule is shown below.

INTERSTATE COMMISSION ON THE DELAWARE RIVER BASIN
CONSTRUCTION SCHEDULE
for
MUNICIPAL SEWAGE TREATMENT FACILITIES

The following table lists, by zones, the type of existing sewage treatment facilities for each municipality now discharging domestic sewage in the interstate Delaware River together with the time schedule for municipal construction projects necessary to maintain and improve the quality of the Delaware River in accordance with the minimum requirements established by the Interstate Commission and agreed to by the State Departments of Health of Delaware, New Jersey, New York and Pennsylvania.

Municipality	Type of Existing Sewage Treatment (Facilities)	Requirements Regarding Additional Sewage Treatment (Type)*	(Completion Date)
ZONE 1			
Hancock, N. Y.	None	Complete	June 1, 1940
Port Jervis, N. Y.[1]	None	Complete	June 1, 1940
Belvidere, N. J.[2]	None	Complete	June 1, 1940
Easton, Penna.	Primary	Complete	Jan. 1, 1942
Phillipsburg, N. J.	Primary	Complete	Jan. 1, 1942
Bethlehem, Penna.	Screens	Complete	Jan. 1, 1942
ZONE 2			
Trenton, N. J.	Primary	Complete	Jan. 1, 1944
Florence, N. J.	Primary	Complete	Jan. 1, 1944
Burlington, N. J.	Primary	Complete	Jan. 1, 1944
Bristol, Penna.	Primary	Complete	Jan. 1, 1944
Beverly, N. J.	Primary	Complete	Jan. 1, 1944
Riverside, N. J.	Primary	Complete	Jan. 1, 1944
ZONE 3			
Riverton, N. J.	None	Primary	June 1, 1940
Philadelphia, Pa.	Primary for about 20% of sewage flow	Primary for 80% flow	Jan. 1, 1943
		Primary for 100% flow	Jan. 1, 1947
Camden, N. J.	Primary for about 20% of sewage flow	Primary for 80% flow	Jan. 1, 1943
		Primary for 100% flow	Jan. 1, 1947
Chester, Penna.	None	Primary	Jan. 1, 1940
Central Dela. Co. Communities, Pa.	None	Primary	Jan. 1, 1942
Gloucester, N. J.	None	Primary	Jan. 1, 1940
Woodbury, N. J.	None	Primary	Jan. 1, 1940
Lower Dela. Co. Communities, Pa.	None	Primary	Jan. 1, 1940

ZONE 4			
Wilmington, Del.	None	Primary	Jan. 1, 1945
New Castle, Del.	None	Primary	Jan. 1, 1943
Bellefonte, Del.	None	Primary	Jan. 1, 1945
Delaware City, Del.	None	Primary	Jan. 1, 1945
Salem, N. J.	None	Primary	Jan. 1, 1940

[1] This construction must be done under the decree of the U. S. Supreme Court in the Delaware River Diversion Case. However, it was agreed that the Port Jervis situation should be discussed with New York City Board of Water Supply officials to see if they could not be prevailed upon to complete the required works by June 1, 1940.

[2] There is no recognized sewerage system in Belvidere. However, the New Jersey Department of Health will investigate conditions and if sewerage and sewage treatment is required, construction thereof is to be completed by June 1, 1940.

You will notice that in some cases complete treatment is called for because of the prejudicial effect of the present pollution as far as existing water supplies are concerned, while in other cases primary treatment only is called for in the present schedule, due to the enormous volume of dilution available at the point of discharge of the wastes. The Quality Committee is now working on the question of industrial wastes and this will mean an elaborate survey of the industries located on the river and its tributaries and the setting up of standards for such industrial wastes.

Since the adoption of the standards certain municipalities have been cited to show cause why their sewage treatment program has not been advancing. Here, for the first time, is an agency which will be a distinct aid to the various states in their local problems, in that the individual state can have the assurance that the other states are bound by the same standards.

WHY AN INTERSTATE COMMISSION FOR DELAWARE

Certain questions naturally come up as to what benefit Delaware would derive by forming a Commission on Interstate Cooperation and joining with these other three states on the same basis as these three other states have already done. Delaware's budget will be approximately $3,000 out of the total budget of $30,000 all of which, with the exception of Delaware's share, is now being assumed by appropriations from the other three states.

Some of the advantages as far as the state of Delaware is concerned might be listed as follows:

In the first place, Delaware would be a participant in the first unified survey of the whole Delaware River Basin; for a small contribution annually, she would be the recipient of the engineering services contributed by the Commission set-up for this survey, which in turn would be re-enforced by the consulting engineering services donated by the Federal government and loaned particularly from the Water Resources Committee of the National Resources Committee. Such a program would provide for a logical cleaning up of the stream, starting at the upper waters but at the same time establishing certain minimum treatment standards for both industrial and municipal wastes. Further, it is possible that the states, by entering into a compact with Congress, might be one of the favored areas to receive grants-in-aid from a comprehensive public works program as has been done by cities, counties and states. I believe the shipping interests, the fish and game groups, and those interested in the oyster industry would feel that this is a small insurance premium to pay for the progressive cleaning up of a body of water which serves an area of some twelve thousand square miles and a population of approximately five million people. In addition to these other interests are those concerned with the use of the water by municipalities for drinking water purposes and for the ever increasing use of such water sheds for recreational facilities. The above is merely a recital of some of the benefits that would accrue from the workings of simply one independent agency set up by the Commissions on Interstate Cooperation, namely, the Interstate Commission on the Delaware River Basin.

Taking a broader view, the establishment of a Commission on Interstate Cooperation would mean that there would be an official agency to deal with other states on the question of uniform crime laws and penalties, on planning, traffic control, milk control and various other problems that arise between states that are contiguous geographically.

SYPHILIS IN DELAWARE

T. E. HYNSON, M. D., and J. R. BECK, M. D.*
Dover, Del.

Delaware, with a population of only 251,000, half of which is urban and half rural, is a state where syphilis can be controlled if it is possible anywhere in the United States.

It is estimated that the incidence of syphilis in the white race is somewhat less than 5%, and between 25 and 30% in the colored, with

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little difference between the rural and urban areas. This means that there are approximately 10,000 white cases, and since the colored population is about one-sixth of the white, 9,000 colored—a total of 19,000 cases.

It is neither the primary duty nor the desire of the public health authorities to treat syphilis, gonorrhea or any other venereal disease. Their duties should consist of the investigation of sources of infection and of seeing that every individual having one of these diseases in an infectious or potentially infectious stage is treated regularly and adequately. Because of the lack of adequate provision for treatment, it has been necessary to reverse these objectives. There is nothing to be gained by finding an infectious case if adequate treatment is not available.

In Delaware an attempt is being made to see that treatment is provided for those in the lower economic classes where the venereal diseases are the most prevalent. The four Wilmington hospitals have enlarged their clinics to provide for the urban areas and the State Board of Health has opened clinics at Newark, Smyrna, Seaford and Frankford within the past year. Any indigent person with syphilis residing beyond a ten-mile radius from a clinic can be treated by his own physician, the State Board of Health supplying the drugs and paying $1.00 per dose of neoarsphenamine and $.50 for bismuth, if the case is properly reported and permission asked for and obtained from the Department. In addition, neoarsphenamine and bismuth are furnished for the treatment of any case upon proper request by the physician. Treatments given in the clinics have increased greatly in the past year as shown by the following:

	1936-37	1937-38	% Increase
New cases reported	1,990	2,932	47.4%
Doses of arsphenamine	9,331	17,311	85.5%
Doses of bismuth and mercury	8,026	17,524	110.8%
Number of Wassermanns	12,058	17,263	43.3%
Number of visits to delinquents & contacts	3,568	5,685	59.4%

There are many syphilitics who, while not indigent, cannot pay specialist fees of $5.00 or $10.00 per injection of neoarsphenamine. These patients could pay a regular office visit, however, and with the state furnishing the necessary drugs for these marginal cases, practitioners should be willing to treat them. This State Board has no desire to have this group become clinic minded.

Any well-trained general practitioner can readily equip himself to carry out the routine treatment of early syphilis, though he may well avoid the complicated tertiary case. He can acquaint himself with the modern methods of treatment by study of recent publications of the U. S. Public Health Service and other authorities. The physicians engaged in the operation of the venereal disease clinics are always glad to assist him in every possible way. The actual technic of administration is no more difficult than many procedures he performs daily, but he must always remember that he is dealing with toxic drugs, that reactions do occur, but can usually be prevented by proper technic and study of the individual patient.

Many physicians have difficulty in holding patients under regular treatment for the necessary year or more. It is to be hoped that with the increased public interest and knowledge of syphilis this situation will improve. It is one of the functions of the State Board of Health to see that infectious cases are kept under regular treatment for the period necessary to remove all danger of relapse. The public health authorities have no desire to know the name of any person receiving regular treatment, but if he becomes delinquent it is their duty to see that he returns to regular treatment as soon as possible. The most satisfactory method for the patient, the physician and the public interest is for the case to be reported by number only when diagnosed, together with such other data as is needed for its statistical value, as age, sex, race, stage and duration of the disease. So long as the patient receives regular treatment he is known only by this number, but if he becomes delinquent he is to be reported by name and will be followed up by a representative of the Board of Health, using the most confidential means possible, the cause of the delinquency ascertained and an effort made to secure his return to his physician. If he cannot continue private treatment because of inability to pay arrangements may be made *with the cooperation and approval of the physician* for him to be treated at a clinic. The mere knowledge that his name will not be reported so long

as he receives regular treatment is a strong factor in holding the patient.

It is planned to revise the method of reporting cases of venereal disease in such a manner as to provide useful information and to be satisfactory to both the practicing physician and the Board of Health. Our present system is inadequate. Very few physicians report on the regular form and few Wassermann slips are sufficiently filled out to be useful. In April 1938, a typical month, of 531 specimens sent in by physicians, 104 were positive. Of these, 5 were properly reported. We thought that 42 were from new cases. The remaining 57 did not have sufficient data to even hazard a guess.

The general practitioner sees most of the early cases of syphilis and gonorrhea and has the best opportunity to secure information as to the source of infection and those subsequently exposed. Since he usually does not want to have his patient questioned by an investigator it is his duty to secure the names and addresses of the alleged source and other contacts and either see that they are examined and treated, if necessary, or to turn this information over to the public health authorities. It has been possible to trace the contacts of a large number of our clinic patients and bring many sources under treatment, but we can do nothing in the higher economic levels without the cooperation of the physician. It is unnecessary for the investigator to know the source of the information, and only a guilty conscience gives the name of the informant to the contact. It is preferable that the examination in such a case be made by the physician and a report made to the health authorities.

If a physician wishes to refer a patient to a clinic for treatment or examination, he should report the name and address to the Board of Health, as well as give the patient a referral slip. We frequently find cases who have been referred, but, their active lesions having healed, do not report and are later picked up as the source of the infection of another case.

The physicians of the state are becoming more syphilis minded. and if they would become more epidemiologically conscious, greater strides in syphilis control could be attained.

SERODIAGNOSIS: RESULTS IN LATEST EVALUATION STUDY

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The syphilis control program has greatly increased the work in this laboratory. In the last fiscal year 14,754 samples of blood and spinal fluids were examined by Kolmer quantitative and Kahn standard test for syphilis. This is an increase of 52% over the previous year.

During this past winter, this laboratory took advantage of the opportunity which was offered by the Division of Venereal Diseases of U. S. P. Health Service to all state and branch laboratories to collaborate in the evaluation of sero-diagnostic tests for syphilis. Fifty-four laboratories took part in this project. The Kahn and Kolmer tests were evaluated for sensitivity and specificity by making tests on approximately 300 samples of blood and comparing our results with the results obtained by the originators of these tests. By sensitivity is meant the ability of the tests to react with samples of blood from syphilitic individuals. Specificity means free from false positive reactions from non-syphilitic individuals. This laboratory received an excellent rating in both of these tests. We checked Dr. Kolmer's results in specificity exactly, and were but 0.2 off on sensitivity. Dr. Kolmer tested 207 samples of blood from known syphilities and received a sensitivity rating of 78.2. This laboratory tested 204 samples of blood from known syphilitics and received a sensitivity rating of 78. In the specificity tests, Dr. Kolmer tested 100 samples of blood from non-syphilitics and received a rating of 100. This laboratory tested 92 samples of blood from non-syphilitics and also received a specificity rating of 100. In the evaluation of the Kahn test, Dr. Kahn's laboratory tested 200 samples of blood from known syphilitics and received a sensitivity rating or 70.5. This laboratory tested the same number of samples of blood (200) from known syphilitics and received a rating of 79.5. In the specificity tests, the control laboratory tested 96 sera from non-syphilitics and received a rating of 100. This laboratory tested 84 and received a rating of 98.8.

The above sensitivity results were mostly

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from tertiary and latent syphilis. Blood from secondary syphilis reacts in 100% of the cases. In primary syphilis the best test is a dark-field examination of serum from chancre for Treponema Pallidum. The Kahn and Wassermann tests do not react until from 10 days to eight weeks after the initial sore or chancre.

In the near future it is hoped that the various laboratories in this state will collaborate in the evaluation of their sero-diagnositic tests for syphilis.

A STUDY OF KENT COUNTY BIRTHS FOR THE YEAR 1937

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The following study of the births in Kent county in 1937 was begun January 1, 1937, with the idea in mind of having some tangible evidence of (1) the economic condition of the families who were having babies; (2) illegitimacy in different groups; (3) the number of children per family in each income group; (4) finding the number attended by physicians and those attended by midwives; (5) finding infant mortality in each group. This information was gathered by means of a card which was filled out by the nurse after visiting the home.

All births were divided into three income groups: those with incomes of less than $500; those with incomes of between $500 and $1000; and those with incomes of more than $1000. The incomes were estimated by public health nurses of experience, and while we do not claim that they are 100% accurate, we think they do divide the families having babies pretty definitely into three economic groups.

There were 602 families in this study. In reading the results you will notice that not all the items total 602. This is because one item or another was not answered on some of the cards, so the total in each case will be the number studied for this particular thing. Of 589 births on which we have definite record of the attendant at birth, 442 were attended by physicians and 147 by midwives. Of this group 462 were white and 127 colored. Of the 442 attended by physicians, 399 were white and 43 colored. Of the 147 attended by midwives, 63 were white and 84 colored.

*Health officer, Kent County.

The following information was compiled with the idea of comparing these three groups:

NUMBER OF FAMILIES
In Under $500 Group ..... 126 or 20.9% of births
In $500 to $1000 Group ..... 332 or 55.2% of births
In Over $1000 Group ..... 144 or 23.9% of births
602

COLOR
White ..... 473 or 78.6%
Colored ..... 129 or 21.4%
Under $500 Group ..... White 56 or 43.7%; Colored 70 or 56.3%
$500 to $1000 Group ..... White 275 or 83 %; Colored 57 or 17 %
Over $1000 Group ..... White 143 or 99.3%; Colored 1 or .7%

ILLEGITIMACY
Total—48 or 8.3%
Under $500 Group ..... White 9 or 16 %; Colored 26 or 37 %
$500 to $1000 Group ..... White 3 or 1.1%; Colored 10 or 18 %
Over $1000 Group ..... White 0; Colored 0

ATTENDANTS AT BIRTH
Whole Group ..... Physicians 442 or 75%; Midwives 147 or 25%
Under $500 Group
Physicians ..... 39 white or 71% of white; 21 colored or 31.8% of colored
Midwives ..... 16 white or 29% of white; 45 colored or 68.2% of colored
$500 to $1000 Group
Physicians ..... 233 white or 85.6% of white; 21 colored or 35% of colored
Midwives ..... 39 white or 14.4% of white; 39 colored or 65% of colored
Over $1000 Group
Physicians ..... 127 white or 94% of white; 1 colored or 100% of colored
Midwives ..... 8 white or 6% of white; 0 colored

NUMBER OF CHILDREN PER FAMILY
Average Number in Whole Group 2.94

Under $500 Group

Number of children per family	1	2	3	4	5	6	7	8	9	10	11
Number of families having the above number of children	40	22	8	12	11	8	4	3	2	0	1

Number of families 111
Number of children 340
Average number of children per family 3.06

$500 to $1000 Group

Number of children per family	1	2	3	4	5	6	7	8	9	10	11	16	18
Number of families having the above number of children	114	58	39	28	34	19	14	11	9	3	3	1	1

Number of families 334
Number of children 1025
Average number of children per family 3.06

$1000 and Over Group

Number of children per family	1	2	3	4	5	6	7	8	9	10	11
Number of families having the above number of children	49	43	11	12	6	3	1	3	4	0	1

Number of families 133
Number of children 335
Average number of children per family 2.52

INFANT MORTALITY
The infant mortality among the 1937 babies up to June 30, 1938, is as follows: 47 of the babies have died giving a general mortality for the group of 77.5. For the different groups it was:
Under $500 Group ..... 19 deaths or a mortality of 150
$500 to $1000 Group..... 21 deaths or a mortality of 63
Over $1000 Group ..... 7 deaths or a mortality of 48.6

Infant Mortality according to Color:

Under $500 Group
Colored ..... 70 births 14 deaths or rate 200
White ..... 56 births 5 deaths or rate 89

$500 to $1000 Group
Colored ..... 57 births 3 deaths or rate 53
White ..... 275 births 18 deaths or rate 65

Over $1000 Group
Colored ..... 1 birth 0 deaths or rate 0
White ..... 143 births 7 deaths or rate 48.9

HOUSING AND PUBLIC HEALTH NURSING

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Each year more than 14,000 women in the United States die from causes connected with childbirth, leaving at least 35,000 children motherless. More than 75,000 infants are stillborn, and more than 69,000 infants die during the first month of life. More than one-third of the births occur in families which are on relief or have total incomes, including home produce, of less than $750 per year. These facts were the basis of a conference on "Better Care for Mothers and Babies" held in Washington, January 17th and 18th, 1938.

It should be unnecessary to point out further that poor housing is a contributing factor to the maternal and infant death rates, when so large a percentage of births occur in families having low incomes. Poor housing, insufficient food and clothing, inadequate medical care, etc., are all considered products of the low income.

A study made by Dr. Stiles gives us the following figures showing the relationship between the number of rooms occupied by a family and the infant mortality: In 1-room tenements the infant mortality rate is 219 per thousand; in 2-room tenements it is 157 per thousand; 3-room, 141; 4-room, 99. We recognize, of course, that these figures are fallacious in that other conditions than housing alone must be taken into consideration as influencing death rates. We cannot, however, fail to appreciate the overwhelming effects of poor housing.

Senate Report No. 935 of the 75th Congress on creating a United States Housing Authority gives the following figures on the City of Louisville: In Louisville there is one case of tuberculosis to every 436 persons. In District No. 1, of the four slum districts in the city there is one case of tuberculosis to every 226 persons, and in the four slum districts as a whole there is one case of tuberculosis to every 156. Compare this to one case for every 463 in the city as a whole, and the deduction is obvious.

A study made of poor and good housing areas in Birmingham, Alabama, gives the following interesting information: The population of the crowded area was about 21,000 greater than that of the uncrowded area, even though there were 1,077 more acres in the latter than in the former. The general death rate in the poor area was 21.1; in the good area it was 12.2. The infant mortality rate in the poor area was 171 per thousand as compared with 89 per thousand in the good area. We may consider these figures as typical, because they are comparable with those given in other studies made in this country and in England.

It is the experience of the public health nurses in Delaware that the influence of poor housing retards convalescence and that it is often impossible properly to care for the sick in the ill-conditioned homes. Infant and maternal mortality rates are highest in areas where economic distress is greatest.

Communicable diseases, tuberculosis and acute infectious diseases have the highest incidence in poor housing areas. The close proximity of beds is one of the factors in the spread of respiratory diseases. The hazards in communicable diseases are increased because isolation is not possible.

Delaware hospitals tell of patients who left their care, entirely recovered, but the home conditions were such that a recurrence of pneumonia and rickets were inevitable. In many instances patients are required to remain in the hospital for long periods because of housing conditions which make it impossible for the case to receive care at home.

Below I have described a typical case of overcrowding with its attendant difficulties. A nurse visited a home to make her first visit to a newborn baby. She found the father, the mother and three children—ages eight years, seven years, and two days respectively—an aunt and her grown daughter and an infant, all living in a tumble-down, 4-room house. There were two very small bedrooms, a small kitchen and a small living room. The father, mother and infant slept in one bedroom, and the aunt, her daughter and infant in the other. The three children slept on the living room couch. The mother was twenty-eight years old and this was her seventh child. Three children had died in infancy from "bronchial

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trouble." The two-year-old child had had pneumonia twice. The family history revealed that this mother had a brother who died of tuberculosis in 1936.

The new babies maternal grandmother who was visiting at the home told the nurse that she had had twelve children, that three of these had died in infancy from "bronchial trouble" and that one, the brother mentioned above, had died of tuberculosis at nineteen.

Such situations as these confront us constantly. We recognize, study, and do our best to find ways of meeting them. We continue to offer our services to the physicians of Delaware, that we may be able to aid them whenever they need us.

DENTAL HYGIENE SERVICE FOR EXPECTANT MOTHER AND INFANT

MARGARET H. JEFFREYS, R. D. H.*
Dover, Del.

Since most authorities agree that nutritious food is largely responsible for the type of teeth a person will have throughout his lifetime, and because it is known that the teeth begin to form six months before birth, it is apparent that dental education must begin with the expectant mother.

Likewise, it is true (and case histories will confirm this fact) that many a mother sacrifices her own teeth during this period, for the child she is carrying draws heavily on the calcium supply in her system to form its teeth and bones. Without adequate dental attention, proper nutrition, and daily care, her teeth may suffer serious harm during these months. Here is definite evidence of the necessity for dental health education.

To reach all mothers during this period is a physical impossibility, but an effort has been made to work with those whom we can reach through our health centers. As a result, the prenatal classes and well-baby conferences have this year opened a new and very fertile field for the dental hygienist to give additional services to the citizens of Delaware.

Of the eight weekly classes attended by each group of expectant mothers, one is devoted to dental health education. Aided by posters, models of teeth and printed information, the dental hygienist gives instructions in home care of the teeth which may be applied to any family regardless of their economic status. Periodic visits to the family dentist, or clinics, are urged, because expectant mothers should have their teeth examined immediately after becoming pregnant.

Many of the mothers who attend these conferences are older women; they are eager to know the facts which will prove most beneficial to their babies, but for themselves, they have little concern. They show little interest in their own teeth, since they have neglected them through life and know they will last but a little longer. They do not realize that if their own teeth were in good condition, they could better prepare their food for digestion, thereby rendering it more useful as building material for their expected child's bones and teeth.

The old tradition and superstition, handed down through the generations—that dental care during the prenatal period may effect the unborn child—has also prevented many mothers from seeking advice. So little is known by the public concerning the strides made in dentistry during the past several years that few people realize that science has discovered many new and worthwhile methods of treatment and that only in the exceptional case is it unwise for a mother to receive dental care throughout the entire pregnancy.

Time is an important factor and years of well-directed effort will be required before wholehearted cooperation may be obtained from all expectant mothers. Our hope for immediate results is with the young girl who marries soon after graduation from high school. With her several years of dental health education in the public schools for a background, she is much more enlightened than the older mother and is eager for information for herself and her child. The frequent contacts with the dentist during her school life have also removed her fear of treatment and she looks upon the dentist as her friend.

Well-baby conferences offer a splendid opportunity to the dental hygienist to convey to the mother the necessity of properly caring for her child's mouth. How timely is this advice, since its care has probably been as little considered as the mother's. Here, too,

*Director, Oral Hygiene, Delaware State Board of Health.

tradition has waged a successful campaign if we may judge results by the number who enter kindergarten and first grade with badly-decayed teeth, diseased gums and a physical resistance so low that the owner might have become the victim of innumerable childhood diseases.

How unfair to subject a child to such conditions at a time when he is passing through one of the most important formative stages of his life. Naturally, his physical and mental growth attained during this period determines his ability to absorb normal conditions in adulthood.

Parents of such children cannot be called ignorant; rather, they are uneducated in the necessity of giving proper emphasis to mouth hygiene. Dental decay knows no class distinction; it is an ever-present hazard in the lives of young and old, rich and poor alike. To all with whom our work brings us contact, we endeavor to impart knowledge of the latest approved preventive methods known to dental authorities.

If we are to save our future generations from becoming a toothless race, we must convince each mother that daily care is necessary; that periodic visits to the dentist are essential; and that food is of vital importance in building and maintaining good teeth. We must be so convincing that when a decision is to be made regarding dental care for Mary, whose mouth is in a deplorable condition, and a permanent wave because Mary's "best friend" has one, she will decide without question in favor of the former and not for a minute consider which deed would give her greater prestige among her neighbors. Such situations exist everywhere and are the old, old problem in sociology—when is a luxury not a necessity. It is human nature for persons to desire what others may have whether they can afford it or not, and any sacrifice will be made to gain that which they believe they must have. It is the general lack of understanding of what constitutes the finest in life.

At best, we can reach only a small proportion of mothers. This is discouraging when we realize that that which we have to give is of general good and not limited to individuals or individual groups. Mouth hygiene has taken on new significance and has graduated to the front ranks of importance since so many ills have been traced to its neglect. We may hope that other avenues of approach may be found, that cooperation of other groups whose interests are akin to ours will in due time find young women ready to face motherhood lacking the many physical handicaps so common in the past.

Treatment of Parathyroid Tetany With Dihydrotachysterol

Cyril M. MacBryde, St. Louis (*Journal A. M. A.*, July 23, 1938), has treated seven female patients with chronic hypocalcemia and the symptoms of tetany with dihydrotachysterol. Five had been under observation and treatment for some years. Their ages ranged from 21 to 56. In six of the patients the tetany occurred following thyroid operations, while in the youngest patient it was of the so-called idiopathic type. The patients were completely relieved. The previous duration of the symptoms of tetany ranged from three and one-half to seventeen years, and all previous therapy had been comparatively ineffective except for the temporary relief afforded by injections of parathyroid extract and calcium. Three patients had developed resistance to the parathyroid extract. Bilateral cataracts had developed in three of these patients previous to the dihydrotachysterol therapy. Two patients had suffered frequent severe epileptiform convulsions. The convulsions did not recur after treatment with dihydrotachysterol. Approximately normal serum calcium levels are now being maintained in the seven patients with doses of from one-third to 1 cc. of dihydrotachysterol daily, supplemented daily by from 4 to 10 Gm. of calcium lactate or gluconate. At the present time, one patient has been free from symptoms for more than one year, one for seven months, two for more than six months and two for more than three months. No tolerance to the drug has been noted. In several cases smaller doses than those originally used seem sufficient to keep the blood calcium normal. In no case was it necessary to increase the dose.

EDITORIAL

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WATCHMAN! WHAT OF THE DAWN?

The individual about this time embarked on his profession as a physican is fortunate. He is about to take part in one of the most momentous changes, is to help in making one of the most momentous decisions, which have ever faced any organized professional group.

One reads his history incorrectly if he does not appreciate that the new era, when it shall have dawned, will as far exceed the old in its value, both to the server and the served, as present-day practice surpasses the technique of a hundred years ago. One marvels at the changes which have occurred in the past twenty or thirty years, a period well within the ken of many now actively engaged in practice. Do we realize that these very advances have sapped the foundations of the older system, have necessitated an entirely new adjustment in a world entirely altered? Formerly medicine had relatively little to give; now there is almost an infinitude of potentialities and these are daily increasing. To name the problem—how it can be brought about that in equity and uprightness those who can and want to serve shall be able to assist those who desire and would profit from the service—is to appreciate that a solution must be found. Until that solution shall have been found, medicine shall not have come to its own. When it shall have been found, the greatest time in the history of medicine shall have arrived.

Who can doubt the ultimate outcome? There are living today persons of as fine ideals, of as scrupulous conscientiousness, of as unselfish devotion as have lived at any time in the world's history. Medicine is fortunate in that many of these are serving in its ranks, earning and deserving public acknowledgments of appreciation, determined and able to bring it about that the high repute of the medical profession shall remain undimmed.

So, he is fortunate who must help in making a decision on which so much must depend.

He cannot remain even in the indeterminate position of an interested observer on the sidelines. On each one individually the final responsibility shall rest, with the knowledge that each must have that no problem is answered except by the right solution. There will be conservatives, kin to those who opposed Hunter and Jenner and Lister. There will be individuals, ready and willing to sacrifice everything, even themselves, if only their crack-brained ideas shall obtain recognition. There will be the selfish, only concerned in the question of the extent to which their individual interests shall be served or jeopardized. There will be the idealist, living in a world of unrealities, whose schemes will be wholly unworkable in a practical everyday world. Somewhere between all these the way of truth and right and workability is to be found.

There is wisdom in the medical profession, sufficient not only to find but to follow the way, a way leading to a future as far surpassing in effectiveness and service and value anything heretofore known as present-day knowledge and technique surpasses that of the Middle Ages.

MISCELLANEOUS

"The Doctor"

The $150,000 sculpticolor reproduction of the Sir Luke Fildes masterpiece "The Doctor," first shown by the Petrolagar Laboratories at Chicago's Century of Progress Exposition in 1933, was recently presented by its owners to the new Rosenwald Museum of Science and Industry in that city.

Following the two World's Fairs, "The Doctor" exhibit went on a tour of 50,000 miles and was viewed by over five million people in 18 principal cities throughout the country.

Designed to remind the public of the importance of the family physician, it required the full time of the late Chicago sculptor, John Paulding, and the noted artist, Rudolph Ingerle and a large corps of assistants, and took nearly a year to complete.

Clinical Aspects of Ultraviolet Therapy

Ethel M. Luce-Clausen, Rochester, N. Y. (*Journal A. M. A.*, July 23, 1938), concludes that the value of ultraviolet radiation in the prevention and cure of rickets and tetany is an accepted fact and has been proved indisputably to be both safe and specific if given under accepted conditions. In the treatment of fractures of bone, experimental evidence points to radiation as being of little if of any value. In the treatment of tuberculosis, no claims for the specificity of ultraviolet radiation have yet been substantiated, though many authors still regard irradiation as a useful aid to other forms of treatment. In the treatment of diseases of the skin of bacterial origin ultraviolet radiation may be of value, provided the organisms lie within the range to which the rays penetrate and are killed or attenuated by doses safe for the host. In other diseases of the skin such as psoriasis, beneficial results might be due to the effect of radiation in producing hyperemia. Tumors of the skin have been produced in rats and mice with prolonged exposure to ultraviolet radiation, but the exposures needed are so far outside the range in general use by man, either in sun bathing or in the use of rays from artificial sources, that a warning of danger seems unnecessary. A caution, however, to avoid the abuse of radiation therapy, since its effects on the skin are imperfectly understood, is completely justified. More research is undoubtedly needed on the question of the photodynamic effect of radiation on the skin with special reference to the possible synthesis, in the skin, of the carcinogenic hydrocarbons.

BOOK REVIEWS

Injection Treatment of Varicose Veins and Hemorrhoids. By H. D. McPhesters, M. D., formerly Director Varicose Vein and Ulcer Clinic, Minneapolis General Hospital; and James K. Anderson, M. D., Instructor in Surgery, University of Minnesota. Pp. 315, with 82 illustrations. Cloth. Price, $4.50. Philadelphia: F. A. Davis Company, 1938.

Because of their similar pathology, these two conditions are combined into one text, McPhesters continuing his work on varicose veins, which began in his previous two books, and Anderson adding the work on hemorrhoids. The book is written for the general practitioner, goes into great detail, and is a thoroughly dependable text.

Outline of Roentgen Diagnosis. By Leo C. Rigler, M. D., Professor of Radiology, University of Minnesota. Atlas Edition. Pp. 212, with 254 illustrations. Paper. Price, $6.50. Philadelphia: J. B. Lippincott Company, 1938.

In this Outline the author has completed a unique book on roentgenology, really a synopsis of this very extensive subject. Dr. Rigler does not claim it to be a reference book. In my opinion, it is a manual of roentgenology and accomplishes that end very admirably. The Atlas is most complete and the cuts are excellent. The descriptions of the figures are comprehensive. There is a Student Edition, without the Atlas, which is priced at $3.00.

The author has personally done much roentgenological research and has contributed many very vital and practical additions to this subject. It is with pleasure and profit that one studies this authentic manual.

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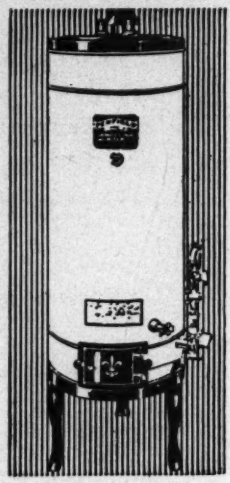

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